

IN THE SUPREME COURT OF THE STATE OF HAWAII

**Electronically Filed  
Supreme Court  
SCEC-18-0000908  
31-DEC-2018  
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MATTHEW S. LOPRESTI,  
  
Plaintiff,

DECLARATION OF SCOTT T. NAGO,  
EXHIBIT E

v.

STATE OF HAWAII'I; SCOTT T. NAGO as  
Chief Election Officer for the State of  
Hawaii'i; and OFFICE OF ELECTIONS,  
State of Hawaii'i,  
  
Defendants.

DECLARATION OF SCOTT T. NAGO

I, SCOTT T. NAGO, do declare under penalty of law that the following is true and correct:

1. I am a resident of the City and County of Honolulu, State of Hawaii, and am the Chief Election Officer for the State of Hawaii.

2. I make this declaration based on my personal knowledge and am competent to testify as to the matters set forth herein.

3. As the Chief Election Officer, I am responsible for administering and managing the Office of Elections which provides election services to the citizens of the State of Hawaii including the planning, management, and conduct of all state elections. HRS § 11-2(a).

4. On December 28, 2018, the Supreme Court of the State of Hawaii issued an Order requiring the provision of the following information:

1. Information setting forth the margin of error for the electronic vote counting machines, when applying the tabulation procedures established by or in accordance to chapter 3-172 of the Hawaii Administrative Rules, that were used in the November 6, 2018 general election.

2. Information setting forth the procedures as to how the intent of the voter is ensured in a close election without a hand count, such as when a ballot contains marginal marks.

5. In order to properly respond, I will provide some context by reiterating some statements made in my earlier declaration in this case and going into more depth about the nuances of the voting system and the objective standard by which it operates.

GENERAL DISCUSSION OF THE UNIFORM AND  
NONDISCRIMINATORY STANDARDS THAT DEFINE WHAT  
CONSTITUTES A VOTE AND WHAT WILL BE COUNTED AS A VOTE

6. Following the closely contested presidential election of 2000 that was litigated before the U.S. Supreme Court, the Help America Vote Act of 2002 (HAVA) was passed. Section 301 of HAVA required various things, including in part, the following: (1) the utilization of voting systems meeting certain standards; and (2) for “[e]ach State to adopt uniform and nondiscriminatory standards that define what constitutes a vote and what will be counted as a vote for each category of voting systems used in the State.” 52 USC § 21081(a).

7. In the State of Hawaii, this had largely occurred with the migration from a hand counted paper ballot system, to a machine system utilizing punchcards, and finally to a marksense voting system in 1998. Specifically, our statutes and administrative rules provide for a uniform standard as to what constitutes a vote and what will be counted as a vote.

8. The Legislature has authorized the Chief Election Officer to adopt a voting and vote counting system and to define what constitute a proper mark for voting purposes of using the system, as has been done by administrative rule. HRS §§ 16-1, 16-2, 16-22, 16-41, and 16-42, and HAR §§ 3-172-83 and 3-172-85. These laws establish a fixed objective standard for the use of an automated voting and vote counting system. The law requires that the system be subject to inspection, audit, and testing by qualified observers before and after an election. Id.

9. As explained in HAR § 3-172-85(a), “[a] demonstration of the proper method to use in marking a marksense ballot shall be available to all voters at the polling place.”

Consistent with this, in addition to instructions at the polling place, the actual ballot has instructions on how to mark the ballot. The instructions include a completely filled in voting position box and the following statements:

**Completely fill in the box to the left of your choice with a black or blue pen.**  
Do not use whiteout.

If you vote for more candidates than allowed in a contest, your votes for that contest will not be counted.

Emphasis added.

10. The above instructions are consistent with HAR § 3-172-85(f), which provides that the voter “shall **properly mark** the ballot in the manner and color or ink or softness of pencil graphite prescribed by the chief election officer as described in the card of instruction.”

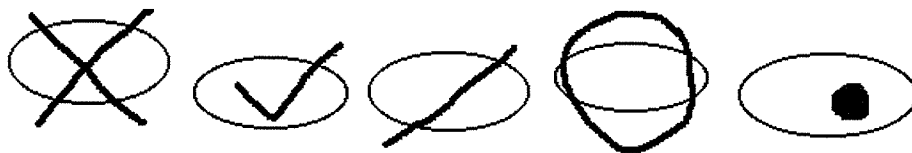
Emphasis added.

11. HAR § 3-172-85(f) further gives examples of what a **proper mark** is and examples of marginal marks and improper marks.

(1) Example of a proper mark



(2) Examples of marginal marks are:



(3) Examples of improper marks are:



12. A “proper mark” involves the voting target area being completely filled in with a proper marking device and consequently being counted as a vote by the system.

13. A “marginal mark” involves a mark in the voting target area in which the voter may have used an improper marking device or did not completely fill in the target area as instructed. As indicated by its name, such marks are marginal and may or may not be counted by the voting system. Essentially, one cannot create an exhaustive list of images of every combination of pixels and criteria being satisfied or not satisfied that would result in a marginal mark being counted or not by the voting system. The nuances of this will be explained in further detail later in this declaration.

14. However, regardless of how detailed and technical one wishes to describe the handling of “marginal marks” by the voting system, voters are instructed to make a “proper mark” and it would be improper for a voter to disregard the instructions and instead attempt to test the system by making a “marginal mark” that they hope is sufficient to be read by the system. Such conduct involves the voter taking an unnecessary risk when faced with clear instructions.

15. An “improper mark” is a mark outside of the voting target area. These marks by definition do not involve a mark in the target area and as such cannot meet the criteria for pixels inside the voting position that would be necessary for it to be counted as a vote.

16. The voting and vote counting system utilized for the 2018 general election was from HartCivic. The voting system was also used during the 2018 primary election and was inspected and tested by official observers in preparation for use for the general election at absentee walk sites, polling places, and absentee mail voting.

17. These official observers, pursuant to HRS § 16-45, were present at the State Capitol to observe the counting of ballots.

18. Official observers, who serve as the “eyes and ears of the public” monitor all counting center operations such as the handling of ballots and scanning of the ballots at the counting center. HRS § 16-45.

19. On the night of the general election, the manual audit team, pursuant to HAR § 3-172-102(a), audited the computer-generated results related to ballots voted at the polls, so as to ensure the accuracy and integrity of the voting and vote counting system. The audit is a hand count of the voted ballots which involved reviewing the physical ballots from the polling places associated with the selected district/precincts and confirming the manual audit results for a selected contest on the ballot matched the computer-generated results for the selected contest. Pursuant to HAR § 3-172-102(b), if discrepancies are found in the audit, the chief election officer may authorize an expanded audit to determine the extent of misreporting within the system. The manual audit team did not request an expanded audit and I similarly saw no basis to question the accuracy and integrity of the voting and vote counting system.

20. The official observers, pursuant to their authority under HAR § 3-172-102(a)(5) to request to conduct a manual audit, audited the computer-generated results related to absentee mail ballots, so as to ensure the accuracy and integrity of the voting and vote counting system. Pursuant to HAR § 3-172-102(b), if discrepancies are found in the audit, the chief election

officer may authorize an expanded audit to determine the extent of misreporting within the system. The official observers did not request an expanded audit and I similarly saw no basis to question the accuracy and integrity of the voting and vote counting system.

21. Specifically, the law is clear that “ballots that were marked for use by a marksense ballot voting system will be counted in accordance with those rules associated with that system to the extent reasonably possible.” HAR § 3-172-102(c)(2)(A).

22. Going into this election, as previously stated, the State of Hawaii adopted a voting and vote counting system and with that a fixed objective standard as to how ballots would be counted based on a properly functioning voting and vote counting system that would be subject to inspection, audit, and testing by qualified observers before and after an election.

23. As we cannot change the rules after an election, any audit of results is focused on confirming how a properly functioning voting and vote counting system would count ballots. Given this, objective evidence that the system was not operating properly would need to be presented, in order to require additional auditing to occur.

24. For the sake of argument, if evidence was provided that a particular voting machine was not operating properly, the solution is not to move to a hand count, but instead to use voting machines that experienced no such problems. HAR § 3-172-102(c)(1)(A).

25. Again, for the sake of argument, if there were inadequate voting machines that experienced no problems, after consultation with the official observers, we could use repaired machines. HAR § 3-172-102(c)(1)(B). Similarly, if a hand count were required, due to there being no properly functioning machines, the hand count is required to “conform to the marking and vote disposition rules relating to the voting system.” HAR § 3-172-102(c)(2). Specifically,

[b]allots that were marked for use by a marksense ballot voting system, will be counted in accordance with those rules associated with that system to the extent reasonably possible. Any hand count of marksense ballots will not utilize any statute or rules associated with the paper ballot voting system, as those marking instruction and vote disposition rules are uniquely different from those statutes and rules associated with other voting systems.

HAR § 3-172-102(c)(2)(A).

26. Under no circumstances, is a different set of rules or a different standard used after an election to count ballots that were originally intended be counted with a particular voting and vote counting system. At all times, one strives to replicate the counting by the original voting system.

#### DISCUSSION OF THE EXACT FUNCTIONING OF THE VOTING SYSTEM IN TERMS OF THE HANDLING OF MARGINAL MARKS AND WHAT CONSTITUTES AN ERROR

27. As it relates to the handling of marginal marks by the voting system, I have been employed by the Office of Elections since 1998 and have served as the Chief Election Officer since 2010. During that time I have become familiar with the marksense voting system, including the system we presently use. With that understanding, I will address my understanding of the technical nature of the voting system's handling of marginal marks and the concept of error.

28. The voting system utilized for the 2018 general election in Hawaii is from Hart InterCivic. In terms of vote recording devices, the system is comprised of three components. The first component is the eSlate, which is a direct recording electronic voting unit that provides accessible voting to individuals with disabilities. Each eSlate includes a verifiable ballot option, whereby a paper record of each vote cast is printed and retained by the device. The second component is the eScan, which is a digital ballot imaging precinct counter, in which the voter inserts his or her ballot to be counted and deposited into the precinct counter. The third

component is Ballot Now which utilizes high-speed scanners to scan absentee ballots to be counted.

29. The State of Hawaii completely migrated to Hart InterCivic in 2008 (i.e., eSlate, eScan, and Ballot Now).

30. Hart InterCivic's Ballot Now uses commercial full-sheet scanning technology to record a full digital image of the voted ballot. Typical resolution of the full-sheet scan is 200 dots per inch (dpi). This resolution provides a high-quality digital image of the voted ballot that is saved on the Ballot Now system and is used for all subsequent election activities.

31. After the scanner converts the paper ballot to an electronic image, Ballot Now analyzes marks at a resolution of 200 dots per inch (dpi). The software counts the number of pixels inside each option box in the digital image.

32. Attached hereto as Exhibit E is a true and correct copy of the manner in which Ballot Now records votes that my office has been provided by Hart InterCivic.

33. As indicated in the document, if more than 4.2% of the pixels are marked, the option box will be recorded as having been marked. Additionally, when an option box is marked so that the number of counted pixels is extremely close to our threshold ( $\pm 7$  pixels), it is possible for an option box to be read as marked in one scan, but read as unmarked in a second scan (or vice versa). Studies of past election data have shown that only around .046% of option boxes fall into the pixel range where variance can occur. The number of affected boxes is lowered even further by the use of the Ballot Now Overvote Reduction Algorithm ("BNORA") algorithm.

34. As indicated in the document, Ballot Now can also apply a BNORA algorithm to eliminate false overvotes caused by pen rests, dirt, or other small marks on the ballot. This



algorithm is based on a calculated statistic called the density ratio. The density ratio is calculated by comparing the number of marked pixels in each box to the average number of marked pixels across all marked boxes on this voter's ballot. The resulting density ratio is essentially the "voter's established pattern" and it is a measure of how well the mark for any particular option box matches the rest of the marks on the ballot. For example, if most of the marked boxes on a ballot have a density near 1, but a single option box has a density ratio of .2, the algorithm will determine that the option with a density ratio of .2 should not be considered a valid voter mark.

35. BNORA is utilized by Ballot Now for the counting of absentee ballots.

36. The precinct counters used in polling places and at absentee walk locations do not use BNORA. Instead, as the voter is present in those locations, the precinct counters are equipped to return the ballot to the voter if the precinct counter detects an overvote (i.e., more voting positions have been marked in a contest than permitted – "Vote For Not More Than One (1)") or a blank vote for a contest (i.e., no voting position in the contest has been marked). The voter then has the option to spoil their ballot, get a new ballot, properly mark it, and submit it to precinct counter. The voter can also choose to override the machine and have the ballot counted, if that is what the voter wants (e.g., the voter consciously chose to leave a contest blank).

37. It is important to note that the ballot clearly provides instructions to the voter.

These instructions reflect a completely filled in voting position box and the following words:

Completely fill in the box to the left of your choice with a black or blue pen. Do not use whiteout.

If you vote for more candidates than allowed in a contest, your votes for that contest will not be counted.

38. As such, voters are not told that "marginal marks" are proper marks for voting purposes or that voters should in any way be encouraged to not follow the clear

instructions on the ballot. A voter reflects their vote by marking the ballot in the uniform method of marking established by election officials (i.e., a completely filled in voting box using a black or blue pen).

39. The Ballot Now system has been validated in multiple studies of real election data and has been certified for use both federally and at the state level in numerous states. In addition, the Ballot Now digital scanning system has been used in hundreds, if not thousands, of elections and has accurately processed millions of votes.

40. As it relates to a “margin of error,” as I understand that term, there is no “margin of error,” for properly marked ballots. However, I wish to make it clear that the election industry is a highly technical industry and does use the term “error rate” in its certification of systems.

41. As previously stated, “[t]he Ballot Now system been validated in multiple studies of real election data and has been certified for use both federally and at the state level in numerous states.” This certification included compliance with 52 USC § 21081(a)(5), which states the following:

The error rate of the voting system in counting ballots (determined by taking into account only those errors which are attributable to the voting system and not attributable to an act of the voter) shall comply with the error rate standards established under section 3.2.1 of the voting systems standards issued by the Federal Election Commission which are in effect on October 29, 2002.

42. Section 3.2.1 of the 2002 Voting System Standards, entitled “Accuracy Requirements” states the following:

Voting system accuracy addresses the accuracy of data for each of the individual ballot positions that could be selected by a voter, including the positions that are not selected. For a voting system, accuracy is defined as the ability of the system to capture, record, store, consolidate and report the specific selections and absence of selections, made by the voter for each ballot position without error. Required accuracy is defined in terms of an error rate that for testing purposes represents the maximum number of errors allowed while processing a specified volume of data. This rate is set at a sufficiently stringent level such that the likelihood of

voting system errors affecting the outcome of an election is exceptionally remote even in the closest of elections.

The error rate is defined using a convention that recognizes differences in how vote data is processed by different types of voting systems. Paper-based and DRE systems have different processing steps. Some differences also exist between precinct count and central count systems. Therefore, the acceptable error rate applies separately and distinctly to each of the following functions:

- a. For all paper-based systems:
  - 1) Scanning ballot positions on paper ballots to detect selections for individual candidates and contests;
  - 2) Conversion of selections detected on paper ballots into digital data;
- b. For all DRE systems:
  - 1) Recording the voter selections of candidates and contests into voting data storage; and
  - 2) Independently from voting data storage, recording voter selections of candidates and contests into ballot image storage.
- c. For precinct-count systems (paper-based and DRE):

Consolidation of vote selection data from multiple precinct-based systems to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data; and
- d. For central-count systems (paper-based and DRE):

Consolidation of vote selection data from multiple counting devices to generate jurisdiction-wide vote counts, including storage and reporting of the consolidated vote data.

For testing purposes, the acceptable error rate is defined using two parameters: the desired error rate to be achieved, and the maximum error rate that should be accepted by the test process.

For each processing function indicated above, the system shall achieve a target error rate of no more than one in 10,000,000 ballot positions, with a maximum acceptable error rate in the test process of one in 500,000 ballot positions.

### 3.2.1 Accuracy Requirements, Voting System Standards Volume I – Performance Standards (FEC 2002).

43. In addition to the previously mentioned certification, pixel of darkness analysis by the system and BNORA, the system is tested by official observers prior to the election and there is an auditing process. If the auditing process were to discover a problem it would have been investigated and the machine repaired. However, absent an issue discovered by the auditing process there is no basis to believe there was an error with the machines.

MARGIN OF ERROR AND DETERMINING THE INTENT OF VOTERS  
WITHOUT A HAND COUNT WHEN BALLOTS CONTAIN MARGINAL MARKS

44. Having said all of the above and incorporating those statements in to my response, I respond as follows to the first inquiry of the Order.

1. Information setting forth the margin of error for the electronic vote counting machines, when applying the tabulation procedures established by or in accordance to chapter 3-172 of the Hawaii Administrative Rules, that were used in the November 6, 2018 general election.

45. As previously stated in this declaration, in greater detail, the machines are tested, voters are instructed in the manner in which to properly mark their ballots, and there are audits, I have no reason to believe there is a “margin of error” as it relates to marks made in the uniform manner established by my office, pursuant to state and federal law.

46. Any references to “margin of error” may be a mistaken reference to the “error rate” that is used as part of the certification of voting system under federal standards. However, such an “error rate” relates to the initial testing of the machines. Specifically, 52 USC § 21081(a)(5), states that “[t]he error rate of the voting system in counting ballots (**determined by taking into account only those errors which are attributable to the voting system and not attributable to an act of the voter**) shall comply with the error rate standards established under section 3.2.1 of the voting systems

standards issued by the Federal Election Commission which are in effect on October 29, 2002.” Emphasis added. As such, “error rate” as used in that context does not involve errors “attributable to an act of the voter” (i.e., “marginal marks” or “improper marks” made by a voter who has not followed the instructions for making a “proper mark” are not considered to be a part of any federal “error rate”). An “error rate” in the context of the federal standards relates to an error occurring, despite all ballots being properly marked by voters.

47. As previously noted,

For testing purposes, the acceptable error rate is defined using two parameters: the desired error rate to be achieved, and the maximum error rate that should be accepted by the test process.

For each processing function indicated above, the system shall achieve a target error rate of no more than one in 10,000,000 ballot positions, with a maximum acceptable error rate in the test process of one in 500,000 ballot positions.

### 3.2.1 Accuracy Requirements, Voting System Standards Volume I – Performance Standards (FEC 2002).

48. The same federal standards state that “[t]his rate is set at a sufficiently stringent level such that the likelihood of voting system errors affecting the outcome of an election is exceptionally remote even in the closest of elections.” Id. Having said that, even though the rate is set at a stringent rate and it “affecting the outcome is exceptionally remote even in the closest elections,” the voting system is tested by official observers and is audited to ensure there is no error in the system. As the system was tested and audited, I have no reason to believe any “error rate” issues occurred with this election.

49. Finally, the term “margin of error” may be a misnomer to describe the possible consequence of voters who make “marginal marks” that are close to the

threshold that the voting system would record as a vote. However, as these are not “proper marks” and are made contrary to the explicit instructions on the ballot, I do not consider them to constitute a “margin of error.” A “margin of error” might exist if my office were to instruct voters to “[c]ompletely fill in the box to the left of your choice with a black or blue pen” and for some technical reason such marks may or may not be counted. However, I know of no such issue existing.

50. Having said all of the above and incorporating those statements in to my response, I respond as follows to the second inquiry of the Order.

2. Information setting forth the procedures as to how the intent of the voter is ensured in a close election without a hand count, such as when a ballot contains marginal marks.

51. As previously stated in this declaration, in greater detail, our state and federal laws require us to have uniform and nondiscriminatory standards that define what constitutes a vote and what will be counted as a vote. 52 USC § 21081(a), HRS §§ 16-1, 16-2, 16-22, 16-41, and 16-42, and HAR §§ 3-172-83 and 3-172-85. These laws establish a fixed objective standard that is focused on the use of an automated voting and vote counting system. The law requires that the system be subject to inspection, audit, and testing by qualified observers before and after an election. Id.

52. Against this backdrop, the concept of “voter intent” must be seen through an objective standard as opposed to a subjective standard. Specifically, election officials are required by state and federal law to have a uniform and nondiscriminatory standards that define what constitutes a vote and what will be counted as a vote. As such, an objective vote is any mark that is read by a properly functioning voting system that has been adopted by election officials and subsequently tested and audited.

53. These audits are focused on confirming how a properly functioning voting and vote counting system would count ballots with various marks and comparing that to the results from the voting system. Specifically, the auditor does not subjectively say a “marginal mark” is a vote or not. Instead, the auditor must be familiar with the voting system and which “marginal marks” a properly functioning voting system will consider to be a vote. If the auditors find that a series of “marginal marks” such as ones that involve perhaps 60% of the pixels being marked, are not being counted as votes by the voting system, then this might be reflective of a machine error that needs to be investigated.

54. As provided in the rules, if such evidence were provided that a particular voting machine was not operating properly, the solution is not to move to a hand count, but instead to use voting machines that experienced no such problems. HAR § 3-172-102(c)(1)(A). If no such machines are available, then repaired machines are utilized. HAR § 3-172-102(c)(1)(B). Similarly, if a hand count were required, due to there being no properly functioning machines, the hand count is required to “conform to the marking and vote disposition rules relating to the voting system.” HAR § 3-172-102(c)(2). Specifically,

[b]allots that were marked for use by a marksense ballot voting system, will be counted in accordance with those rules associated with that system to the extent reasonably possible. Any hand count of marksense ballots will not utilize any statute or rules associated with the paper ballot voting system, as those marking instruction and vote disposition rules are uniquely different from those statutes and rules associated with other voting systems.

HAR § 3-172-102(c)(2)(A).

55. However, as previously noted, under no circumstances, is a different set of rules or a different standard used after an election to count ballots that were originally intended be counted with a particular voting and vote counting system. At all times, one strives to replicate the counting by the original voting system.

56. It is with this understanding that I respond to the second inquiry of the Order by stating that the “intent of the voter is ensured in a close election, without a hand count, such as when a ballot contains marginal marks,” by ensuring that (1) the properly adopted voting and voting counting system is functioning properly; (2) the counting of ballots that have been marked in conformance with the instruction of election officials; and (3) through the use of the auditing process. HRS §§ 16-1, 16-2, 16-22, 16-41, and 16-42, and HAR §§ 3-172-83 and 3-172-102.

DATED: Pearl City, Hawaii, December 31, 2018.



SCOTT T. NAGO